Algebraic proof

Exit ticket ANSWERS Name _____

1. Write two consecutive odd numbers using n.

$2n + 1$ and $2n + 3$

2. Prove that the sum of five consecutive even numbers is a multiple of 10.

$10n + 20 = 10(n + 2)$

3. Prove that $(n + 4)^2 - (n + 2)^2$ is a multiple of 4.

$4n + 12 = 4(n + 3)$

The Maths Habit

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NEXT LESSON

1 **Write two consecutive odd numbers using n.**

$2n + 1$ and $2n + 3$

TESTS — Writing odd numbers with n: $2n + 1$, then add 2

LOOK FOR — *$n + 1$ and $n + 3$* not always odd: try $n = 1$

$2n + 1$ and $2n + 2$ added 1: the second is even

FIX IT — Write three consecutive even numbers using n. *$2n$, $2n + 2$, $2n + 4$*

2 **Prove that the sum of five consecutive even numbers is a multiple of 10.**

$10n + 20 = 10(n + 2)$

TESTS — A sum proved: write with n, collect, factorise

LOOK FOR — *$5n + 20 = 5(n + 4)$* n used for an even number: it only shows a multiple of 5

FIX IT — Prove that the sum of three consecutive odd numbers is a multiple of 3. *$6n + 9 = 3(2n + 3)$*

3 **Prove that $(n + 4)^2 - (n + 2)^2$ is a multiple of 4.**

$4n + 12 = 4(n + 3)$

TESTS — Expanding two squares, the second bracket subtracted whole

LOOK FOR — *12* squared each term: $(n + 4)^2$ is not $n^2 + 16$

$12n + 20$ only the n^2 subtracted, not the whole bracket

FIX IT — Prove that $(n + 6)^2 - (n + 2)^2$ is a multiple of 8. *$8n + 32 = 8(n + 4)$*